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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/506,304	09/01/2004	Fan Bin	17707-002US1	3220
26161	7590	02/05/2008		
FISH & RICHARDSON PC P.O. BOX 1022 MINNEAPOLIS, MN 55440-1022			EXAMINER DOWLING, WILLIAM C	
			ART UNIT 2851	PAPER NUMBER
			MAIL DATE 02/05/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/506,304

Applicant(s)

BIN ET AL.

Examiner

William C. Dowling

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 December 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 13-50 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 13-50 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 13-50 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. The amendment language of Claims 37, 38, 43 is indefinite because the structure recited does not adequately describe the invention and is open to different interpretations. The language recites "each micro dichroic filter array are configured to transmit a corresponding *filtered portion* of a light beam"". The dichroic means are the filters so it is unclear what is forming some other "filtered" beams to be transmitted by the dichroic filter array or what "unfiltered" beams are reflected by the dichroic filter array. The language may alternately be interpreted merely as the filter array forms a part of the display panels.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 37, 13-16, 18, 20-24, 33, 35-36, 43-46, 48-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii et al. (5,552,840) in view of Yang (5,612,814).

Ishii et al. (5,552,840) discloses a projection system comprising:
a single polarizing beamsplitting cube prism (70 having polarizing surface (70a);
LCD panels (12, 12');
a light source (16);
projection means (5) for amplifying the image for projection.

As noted in Column 14 Lines 1-3 the LCD's may be formed of LCOS type.

A particular embodiment uses colored microfilters (994a, 94b, 94c) adjacent individual pixels of the LCD panels to transmit primary colors red, blue, and green.

The structure of Ishii et al. may utilize different images to form a three dimensional projection or images of a same view to form a conventional projected image.

Ishii et al. does not teach the use of dichroic filters as the filter means.

Yang (5,612,814) teaches the use of dichroic color filter means (220) adjacent a reflective image modulator.

It would have been obvious to one skilled in the art at the time of the invention to modify the device of Ishii et al. by the substitution of dichroic filter means for dye filters in order to reflect undesired colors and avoid heat buildup caused by absorption. It further would have been obvious to one skilled in the art to place such color filters at any position between the entrance to the display panels and the particular modulating

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elements because such a structure would operate in alike manner . It would have also been obvious to form the filter elements integrally with the panels so as the be a part of the panels themselves because such an integral display panels eliminates the necessity for aligned of optical elements and simplifies the structure.

2. Claims 17, 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii et al. and Yang in view of Brennesholtz.

Ishii et al. disclose the invention substantially as claimed but do not teach the use of cyan, magenta, and yellow filters on the second panel.

With respect to Claim 17, the use of yellow, cyan, and magenta is well known as an alternate to the use of red, green, and blue modulators in order to form full color images. It is further known to utilize all six colors to form a six-color gamut.

Brennesholtz teaches a two-panel projection system wherein one panel modulates red, green, and blue light while a second panel modulates cyan, yellow and magenta.

It would have been obvious to one skilled in the art at the time of the invention to modify the device of Ishii in the standard projection mode by the use of six different color microfilters in order to form a six color projection device in order to achieve increased color mixing.

3. Claims 37-43, 45-46, 48-50, 13-16, 19, 23, 25-33, 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fulkerson et al. (6,490,087) in view of Yang (5,612,814)..

Fulkerson et al. (6,490,087) discloses a projection system comprising:

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Embodiment 1, Figure 2:

a single cube prism (2) having polarizing surfaces (6, 7);

LCD panels (8,9);

A light source (16).

As noted in Column 9 Lines 9-10, the LCD's may be formed of LCOS type

Embodiment 2, Figure 3:

Four prisms (26A, 26B, 26C, 26D);

A light source (16);

Half wave plates (28);

Polarizers (30);

LCD's (8,9)

As noted in column 9 Lines 11-16, color filter means may be positioned between the prism surfaces and a respective LCD panel.

Yang (5,612,814) teaches the use of dichroic color filter means (220) adjacent a reflective image modulator. Figure 3A shows the full color structure of the color filter (220)

It would have been obvious to one skilled in the art at the time of the invention to modify the device of Fulkerson by the use of dichroic type means in order to reflect undesired colors and avoid heat buildup caused by absorption of lights. . It further would have been obvious to one skilled in the art to place such color filters at any position between the entrance to the display panels and the particular modulating elements because such a structure would operate in alike manner. It would have also

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been obvious to form the filter elements integrally with the panels so as to be a part of the panels themselves because such an integral display panel eliminates the necessity for alignment of optical elements and simplifies the structure.

4. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii et al. and Yang in view of Pentico et al. (6,857,747).

Ishii et al. disclose the invention substantially as claimed but do not teach the use of quarter wave plates between the panels and the PBS. Ishii et al. does teach the use of a birefringent plate between the PBS and the screen for forming circularly polarized lights. Quarter wave plates are known birefringent means to rotate linear polarized light to circular.

Pentico et al. further clarifies the use of quarter wave plates on a light path from two reflective modulators to a PBS (Column 9 Lines 52-55) to separately modify the rotation of light.

As best as the application disclosure explains the use of quarter wave plates (a single statement), it would have been obvious to one skilled in the art at the time of the invention to modify the device of Ishii et al. by the use of two retarder plates before the PBS rather than a single one after the PBS, as taught by Pentico, in order to allow for individual rotation of the lights.

Response to Arguments

5. Applicant's arguments filed 11/13/06 have been fully considered but they are not persuasive.

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6. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves **or in the knowledge generally available to one of ordinary skill in the art.** See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Ishii suggests the formation of microfilters by several methods including "by dyeing, electrodeposition, printing, etc." This does not limit forming the filters only by such disclosed methods. This would suggest to one skilled in the art the formation of the filters by any of known methods. Yang teaches such a known method. Also, to support an obviousness rejection the modification does not have to result in a "superior" design.

References also do not have to specifically set forth a particular reason for making a modification. Again, the standard is what is known to one skilled in the art. It is common knowledge that filters which reflect non-transmitted colors rather than absorbing them will result in less heat accumulating within the filter itself. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only

from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Fulkerson teaches a polarization light separation structure identical to that which is claimed for directing light to two panels. It is this structure which forms the basis for the rejection. Yang is relied upon to teach the provision of micro-filters in conjunction with LCD panels to form full color images from a single display. Applying such concept to the arrangement of Fulkerson would allow for two full color images such as in stereoscopic projectors, which utilize only two panels, as is known in the art.

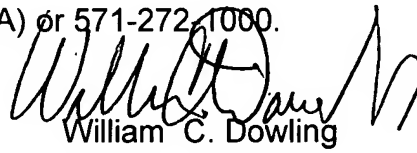
Applicant's argument regarding Yang not teaching full color is incorrect. Figure 3A clearly shows the filter structure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William C. Dowling whose telephone number is 571-272-2116. The examiner can normally be reached on MON-THURS.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diane Lee can be reached on 571-272-2399. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



William C. Dowling
Primary Examiner
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wcd